Claims

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A trencher, comprising,

(a) a carriage for guided movement over a working surface, the carriage including a boom structure,

(b) a digging chain support frame mounted to the boom structure of the carriage such that the digging chain support frame may be translated to a lowered position suitable for excavating a trench and such that the digging chain support frame may be oriented in a generally upright fashion at least when it is in a lowered position suitable for excavating a trench,

(c) an endless digging chain engageable with wheels rotatably mounted to the digging chain support frame,

(d) a chain drive motor for causing rotation of the wheels and movement of the digging chain,

(e) an auger assembly adjustably mounted to the digging chain support frame for placement in a position corresponding to a desired trench depth, the auger assembly including at least one auger drive sprocket wheel for engaging the digging chain and at least two augers each mounted to the at least one auger drive sprocket wheel on opposite sides thereof, the augers for transferring material away from the digging chain as the digging chain excavates material from a trench,

whereby the substantially upright digging chain may excavate a trench as the augers of the auger assembly push excavated soil away from the trench and whereby the upright digging chain may also be guided to dig a curved while the digging chain does not sufficiently interfere with the walls of the trench to impede the operation of the trencher.

2. In combination with a powered carriage of the type adapted for movement across a working surface and of the type having a translating boom structure capable of translation between a raised position and a lowered position along a substantially upright path, a trenching device for mounting to the carriage boom comprising;

(a) a digging chain support frame adapted to be carried by the boom structure of the carriage in a substantially upright orientation,

(b) an endless digging chain engageable with wheels rotatably mounted to the digging chain support frame,

(d) a chain drive motor for causing rotation of the wheels and movement of the digging chain,

(e) an auger assembly adjustably mounted to the digging chain support frame for placement in a position corresponding to a desired trench depth, the auger assembly including at least one auger drive sprocket wheel for engaging the digging chain and at least two augers each mounted to the at least one auger drive sprocket wheel

on opposite sides thereof, the augers for transferring material away from the digging chain as the digging chain excavates material from a trench,

whereby the substantially upright digging chain may be lowered into the working surface by movement of the carriage boom to excavate a trench as the augers of the auger assembly push excavated soil away from the trench and whereby the upright digging chain may also dig a curved trench as the carriage follows a curved path while the digging chain does not sufficiently interfere with the walls of the trench to impede movement of the digging chain.

3. A digging chain support frame comprising;

(a) a truck portion suitable for mounting to the boom structure of powered steerable carriage, the truck portion including a generally transverse sprocket wheel shaft rotatably mounted thereto, a sprocket wheel mounted to the sprocket wheel shaft and a motor for turning the sprocket wheel shaft and the sprocket wheel in relation to the truck portion,

(b) a digging chain support member mounted to the truck portion,

(c) an idler pulley wheel mounted to the digging chain support member toward the end thereof opposite the sprocket wheel of the truck portion,

(d) an endless digging chain carried by the sprocket wheel of the truck portion and the idler pulley wheel for movement in response to the rotation of the sprocket wheel,

(e) the digging chain support member and the digging chain arranged for substantially upright orientation when lowered into a position suitable for excavating a trench,

(f) an auger assembly adjustably mounted to the digging chain support member for placement in a position corresponding to a desired trench depth, the auger assembly including at least one auger drive sprocket wheel for engaging the digging chain and at least two augers each mounted to the at least one auger drive sprocket wheel on opposite sides thereof, the augers for transferring material away from the digging chain as the digging chain excavates material from a trench,

whereby the augers of the auger assembly push excavated soil away from the trench thus preventing return of such excavated soil into the trench thus permitting the generally upright orientation of the digging chain support member and the digging chain while in a lowered position suitable for digging and whereby the generally upright digging chain may be guided along a curved path to excavate a curved trench while the generally upright digging chain does not sufficiently interfere with the walls of the trench to impede movement of the digging chain.

4. The digging chain support frame of claim 3 wherein,

the idler pulley is mounted to the digging chain support member in an adjustable manner to take up slack in the digging chain.